

AMENDMENTS TO THE CLAIMS

1. (currently amended) An aqueous sizing composition comprising:

(a) a first component including an emulsion having an alkenylsuccinic anhydride component containing (i) alkenylsuccinic anhydride particles and (ii) surfactant component; suspended in water; and

(b) a second component selected from the group consisting of cationic starches, non-ionic starches, anionic starches, water, ~~water-soluble polymers, water-soluble anionic vinyl addition polymers, water-soluble neutral polymers, water-soluble condensation polymers,~~ and mixtures thereof;

wherein the surfactant component is selected from the group consisting of sulfosuccinates, alkyl and aryl amides and primary, secondary and tertiary amines and their corresponding quaternary salts fatty acids, ethoxylated fatty acids, fatty alcohols, ethoxylated fatty alcohols, fatty esters, ethoxylated fatty esters, ethoxylated triglycerides, ethoxylated lanolin, sulfonated amines, sulfonated amides, ethoxylated polymers, propoxylated polymers, ethoxylated/ propoxylated copolymers, polyethylene glycols, phosphate esters, phosphonated fatty acid ethoxylates, phosphonated fatty alcohol ethoxylates, alkyl sulfonates, aryl sulfonates, alkyl sulfates, aryl sulfates, and combinations thereof; and

wherein the alkenylsuccinic anhydride component and the second component are sufficiently diluted to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the fibrous substrate.

2. (canceled)

3. (original) The sizing composition of Claim 1, wherein the surfactant component is present at a level ranging from about 0.1 weight % up to about 20 weight %, based on alkenylsuccinic anhydride.

4. (original) The sizing composition of Claim 1, wherein the alkenyl succinic anhydride particles have a median particle size ranging from about 0.5 to about 20 microns.

5. (original) The sizing composition of Claim 1, wherein the alkenylsuccinic anhydride component further comprises hydrolyzed alkenylsuccinic anhydride in an amount ranging from about 1 to about 99% based on the total weight of the alkenylsuccinic anhydride.

6. (original) The sizing composition of Claim 1, wherein the sizing composition is of sufficient dilution so that when the sizing composition treats a fibrous substrate, the treated fibrous substrate has a Cobb sizing of less than about 150 gsm for 30 minutes or about 100 gsm for two minutes.

7. (original) The sizing composition of Claim 1, wherein the sizing composition is of sufficient dilution so that if the sizing composition treats a fibrous substrate, the treated fibrous substrate retards ink penetration, giving an HST value of at least ten seconds.

8. (original) The sizing composition of Claim 1, wherein the sizing composition is of sufficient dilution to minimize the sizing composition from coalescing at a temperature ranging from about 40 to about 200 °F.

9. (original) The sizing composition of Claim 1, wherein the alkenyl succinic anhydride particles have a monomodal particle distribution.

10. (original) The sizing composition of Claim 1, wherein the alkenyl succinic anhydride particles have a bimodal or a multimodal particle distribution.

11. (original) The sizing composition of Claim 1, wherein the alkenyl succinic anhydride is present from about 0.001 to about 5 wt percent %.

12. (currently amended) The sizing composition of Claim 1, wherein the polymer second component is a water-soluble polymer selected from the group consisting of cationic vinyl addition polymers, water-soluble anionic vinyl addition polymers, water-soluble neutral polymers, ampholytic polymers, water-soluble condensation polymers, and combinations thereof.

13-43. (canceled)

44. (currently amended) An aqueous sizing composition comprising:

(a) a heated first component including an emulsion having an alkenylsuccinic anhydride component containing (i) alkenylsuccinic anhydride particles and (ii) surfactant component; suspended in water; and

(b) a second component selected from the group consisting of cationic starches, non-ionic starches, anionic starches, water, water-soluble polymers, water-soluble anionic vinyl addition polymers, water-soluble neutral polymers, water-soluble condensation polymers, and mixtures thereof;

wherein the surfactant component is selected from the group consisting of sulfosuccinates, alkyl and aryl amides and primary, secondary and tertiary amines and their corresponding quaternary salts fatty acids, ethoxylated fatty acids, fatty alcohols, ethoxylated fatty alcohols, fatty esters, ethoxylated fatty esters, ethoxylated triglycerides, ethoxylated lanolin, sulfonated amines, sulfonated amides, ethoxylated polymers, propoxylated polymers, ethoxylated/ propoxylated copolymers, polyethylene glycols, phosphate esters, phosphonated fatty acid ethoxylates, phosphonated fatty alcohol ethoxylates, alkyl sulfonates, aryl sulfonates, alkyl sulfates, aryl sulfates, and combinations thereof; and

wherein the alkenylsuccinic anhydride component and the second component are sufficiently diluted to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the fibrous substrate, and wherein the sizing composition is at a temperature that is more than about 40 F.

45. (currently amended) An aqueous sizing composition comprising:

(a) a first component including an emulsion having an alkene ketene dimer component containing (i) alkene ketene dimer particles and (ii) surfactant component; suspended in water; and

(b) a second component selected from the group consisting of cationic starches, non-ionic starches, anionic starches, water, ~~water-soluble polymers, water-soluble anionic vinyl addition polymers, water-soluble neutral polymers, water-soluble condensation polymers,~~ and mixtures thereof;

wherein the surfactant component is selected from the group consisting of sulfosuccinates, alkyl and aryl amides and primary, secondary and tertiary amines and their corresponding quaternary salts fatty acids, ethoxylated fatty acids, fatty alcohols, ethoxylated fatty alcohols, fatty esters, ethoxylated fatty esters, ethoxylated triglycerides, ethoxylated lanolin, sulfonated amines, sulfonated amides, ethoxylated polymers, propoxylated polymers, ethoxylated/ propoxylated copolymers, polyethylene glycols, phosphate esters, phosphonated fatty acid ethoxylates, phosphonated fatty alcohol ethoxylates, alkyl sulfonates, aryl sulfonates, alkyl sulfates, aryl sulfates, and combinations thereof; and

wherein the alkylene ketene dimer component and the second component are sufficiently diluted to enable the sizing composition to impart useful sizing properties to a fibrous substrate when the sizing composition contacts the fibrous substrate.